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Massive Nuclear Cleanup Hobbled by Funding Shortfall
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LIVERMORE, Calif.—About 45 miles southeast of San Francisco, in an 800-acre mini-city built to create atomic bombs, there's a contaminated building slated for eventual demolition.

Mark Costella, a facilities manager at the Energy Department's Lawrence Livermore National Laboratory, would prefer to tear down the structure, but doesn't have the tens of millions of dollars needed. Instead, he's spending \$500,000 to fix the roof.

These are the kinds of contradictions at the heart of the complicated, expensive and struggling effort to clean up America's 70-year-old nuclear-weapons program.

The Energy Department's cleanup operation is wrestling with reduced budgets, tens of billions of dollars in ballooning cost estimates and 2,700 structures on its to-do list. Officials said more than 350 additional unneeded facilities controlled by other programs in the Energy Department are likely eligible for transfer to the cleanup operation. But that office said its funds are limited and it isn't accepting any more projects for now, no matter their significance.

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That means some of the nation's toughest threats are now on the back burner, possibly for decades, while some relatively low-priority work moves forward.

Dirty and decaying structures where weapons work and other federal nuclear activities were carried out—some the size of several football fields and old enough to qualify for Social Security—are clustered in federal sites from South Carolina to California. Some are within easy walking distance of people's homes.

Congress and government watchdogs have started raising alarms about the stockpile of contaminated buildings, warning that some of the facilities pose a health risk to the public and that the cost of dealing with them will only increase the longer they remain standing. Provisions directing the administration to address the issue were included in Congress's 2016 defense bill, vetoed by President Barack Obama earlier this month.

The cleanup work, which includes a mixture of radioactive and chemical wastes, "is the largest environmental remediation ever undertaken by mankind and the most technically challenging," said Gregory Friedman, who earlier this month retired as the Energy Department's Inspector General, in an interview.

One reason for the Energy Department's struggles is a budgetary tug of war within the agency. One part of the department maintains the U.S.'s atomic arsenal, and another is in charge of cleaning up the contamination from nuclear work. Funds for both come from the same pot, and in a shift from the 1990s, an increasing portion is going toward ensuring the readiness of the weapons arsenal, an Obama administration priority.

The nuclear-weapons budget grew 5% to \$8.2 billion in the latest fiscal year—up 23% in the past decade—while the budget for cleanup was essentially flat at \$5.9 billion—and down 19% since 2005.

Moreover, funds available to those two operations aren't always well spent, the Government Accountability Office said. A February report by the GAO, the investigative arm of Congress, tagged both the Energy Department's weapons operation and its cleanup operation as being at high risk of fraud and waste on major construction projects. The report cited several troubled projects, including a new \$6.5 billion uranium-processing facility in

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Tennessee for the weapons program where about \$1 billion has been spent so far on just design work, including one plan that had the roof 13 feet too low to accommodate the equipment.

Energy Department officials acknowledged they have at times struggled to adhere to budgets and schedules on such complex projects. They also said the department is improving. When the problems arose at the Tennessee project, the department adopted a less-ambitious building plan to keep down costs, they said.

A working group appointed earlier this year by Energy Secretary Ernest Moniz is examining what to do with all the closed contaminated buildings.

“We’re making progress on important things,” said Mark Gilbertson, a deputy assistant secretary in the Energy Department’s Environmental Management office, which oversees the cleanup operations. Still, he adds, it is difficult to take on new tasks when existing commitments require “several billion dollars more than we are getting in our budget.”

Between 2010 and 2014, the Energy Department spent over \$22 billion on cleanup work. During the same period, the department’s estimated cost of the remediation work still to be done rose to \$204 billion, a 20% jump.

For decades, beginning with World War II’s Manhattan Project and through the Cold War, environmental concerns took a back seat to building bombs. “You were in a war. The No. 1 priority was how much weapons material you could generate,” said Leo Duffy, who headed what is now the Environmental Management office when it was formed in 1989.

At the end of the Cold War, health concerns quickly took center stage. A 1991 report by the now-defunct congressional Office of Technology Assessment said that the limited data available “indicate that off-site health effects are an unproven but plausible consequence of Weapons Complex pollution.” Whether such health effects have occurred remains a debated topic.

Generally, experts say, the risk to workers or the public of radioactive and chemical contaminants leaking from the buildings is relatively low. Much current scientific thinking holds that exposure to even a small amount of additional radiation raises a person’s cancer risk slightly, with the risk rising along with the dose.

Environmental Management's annual budget by 1994 had soared nearly fivefold to \$6.2 billion and for the first time surpassed weapons spending. "We are redirecting the national commitment that built the most powerful weapons the world has ever known, toward addressing the resulting widespread environmental and safety problems," wrote then-Energy Secretary Hazel O'Leary. "We have a moral obligation to do no less."

Weapons sites

As part of the cleanup effort, Energy Department officials surveyed hundreds of locations, many relatively small and privately owned, which had taken part in early weapons work. Several dozen such sites have been or are being cleaned up under a program now being run by the Army Corps of Engineers, part of the Defense Department, under its own \$100 million annual budget. That program was highlighted in a 2013 Wall Street Journal series on the legacy of nuclear-weapons production.

The most expensive and complicated challenges, however, are found in a handful of the big government-owned weapons facilities, such as Y-12 in Tennessee and the Hanford site, which stretches over 586 square miles in Washington state.

The Energy Department estimates that the remaining cleanup work at Hanford, which closed in the 1980s after producing tons of plutonium for weapons, will cost about \$100 billion.

In 2005, the Environmental Management budget reached nearly \$7.3 billion. Since then, it has drifted downward—except for a one-time \$6 billion infusion in 2009 from the American Recovery and Reinvestment Act, the stimulus package designed to spur the economy. The Obama administration has asked for \$5.8 billion for fiscal 2016, about the same as 2015.

For the weapons budget, meanwhile, the administration has asked for an 8% increase for the year.

In recent years, the Pentagon has pushed for multi-billion-dollar increases to upgrade the U.S.'s nuclear forces. One problem, officials said, is the age and condition of the current infrastructure. The \$6.5 billion uranium-processing project in Tennessee would replace a facility that has been operating since the 1940s at the Y-12 site, which is run by the National Nuclear Security Administration, the Energy Department arm that is in charge of the

weapons stockpile and related infrastructure.

As of September 2014, the most recent year available, the U.S. had about 4,700 warheads, compared with the peak of over 31,000 in 1967, according to the NNSA. Under the New Start Treaty with Russia, ratified by the Senate in 2010, the number of warheads in the U.S. arsenal will continue to fall.

A Senate resolution that was part of the ratification process affirmed a “robust” commitment to maintain and modernize the atomic arsenal and required the president to commit to support fully funding two multi-billion-dollar upgrades to the country’s weapons infrastructure, including replacing the Tennessee uranium facility. In 2010, the White House laid out a schedule to spend \$80 billion to \$85 billion on the weapons complex in the coming 10 years, compared with \$65.8 billion in the prior decade.

A White House spokesman said President Obama came into office with the intention of increasing funding for nuclear weapons “after a decade of underfunding and neglecting our core facilities and capabilities.”

On the cleanup front, Environmental Management has disposed of over 2,800 facilities since 1989, ranging from trailers to giant uranium-enrichment plants. It still has a like number in its inventory. And given current schedules and expected funding levels, cleanup officials said it might be 2035 before they begin accepting any more mothballed buildings. Officials said the review ordered by Sec. Moniz is looking at the scheduling issue.

The responsibility and cost of maintaining a contaminated structure remain with the original owner until it is formally transferred to Environmental Management. The cleanup operation said it doesn’t have the funds to take on more projects and that it has agreements with multiple parties, including state officials, that help shape its schedule.

That means some relatively clean structures are being torn down instead of dirtier ones. According to a March GAO report, officials removed two uncontaminated water towers at the Los Alamos, N.M., weapons complex while a large, contaminated building that has been vacant for 20 years and “poses human health and environmental risks” remains standing.

The Energy Department said the water towers were part of a designated-area cleanup, while the contaminated building “has not

yet been accepted due to budget constraints.”

Mr. Friedman, the department’s recently retired Inspector General, advocates that cleanup funds need to be focused “on the highest-risk remediation sites on a national-priority basis.” In a January report, the Inspector General’s office said some facilities “pose significant risks to workers and surrounding communities” and that the longer the facilities remain standing and deteriorating “the more dangerous and costly they are.”

Tennessee risk

Three particularly high-risk mothballed sites that haven’t been transferred to Environmental Management are at Tennessee’s Y-12 operation, according to NNSA.

During World War II, the government took over some 59,000 acres of rural eastern Tennessee, displacing about 3,000 people. Small reminders of that pre-nuclear world remain: a modest church that now serves mostly as a museum and two cemeteries where at least one headstone dates back to when threats came from British redcoats.

Nestled in Bear Creek Valley, Y-12 is a jumble of buildings, some dilapidated and dating back seven decades. Rows of razor wire and armed guards in camouflage fatigues serve as reminders of the large amount of highly enriched uranium kept there.

Atop the NNSA’s national-risk list is Y-12’s Alpha 5 building. Built in 1944 to enrich uranium for the Hiroshima bomb, Alpha 5 covers the equivalent of over 10 football fields. It was closed in 2008. According to a March NNSA report, the roof is collapsing; radiological contamination and “uncontrolled mold growth” are spreading; and mercury is suspected of leaking into a nearby creek.

Despite nearly \$2 million in annual maintenance and surveillance spending, “the speed of degradation is far outpacing available funding,” said the report, which estimated disposing of Alpha 5 would cost over half a billion dollars.

Officials wouldn’t allow a visiting reporter into Alpha 5 or Y-12’s other buildings, citing a combination of security and safety concerns. They did provide a driving tour around parts of the site. Among all the radioactive and toxic materials there, “mercury contamination, that is the largest concern,” said Ray Smith, Y-12’s historian, from a ridge overlooking the site.

The amount of mercury that was released into the water, air and soil, estimated at as much as two million pounds, “dwarfs any other contaminant release” at Y-12, said a 2013 Energy Department report. Tests between 1988 and 2012 showed mercury levels in local-area fish to be roughly twice a Food and Drug Administration consumption advisory level and slowly rising, according to the report. Signs are posted warning people against fishing or swimming in some of the local waters.

Generally, there isn’t evidence of harm to local public health from Y-12 mercury, said a 2012 report from the federal Agency for Toxic Substances and Disease Registry. However, it added, children who ate certain local fish once a month had a small increased risk of harm in areas such as IQ and memory. Excessive mercury consumption can damage neurological development and functions including speech, coordination and vision.

The Energy Department said Y-12 has cut mercury discharges into the East Fork of Poplar Creek by about 95% but acknowledged “the mercury levels in fish tissue have not seen a corresponding decrease.” Officials are looking at building a treatment plant to further reduce mercury discharges.

The Lawrence Livermore complex has four buildings on the NNSA’s top-ten risk list. “This is the Ugly Tour,” said the site’s Mr. Costella as he guided a visitor through the structures.

One building holds an old reactor with a large and visible crack in its cement shielding. According to a March NNSA report, officials are concerned that a further failure could lead to a release of contamination.

A Lawrence Livermore spokeswoman said steps have been taken to keep any contamination from the reactor “within the unoccupied, closed, secured and sealed outer building, which is constructed of solid reinforced steel.”

Mr. Costella said these buildings aren’t as contaminated as some at other locations around the country. For instance, Y-12’s Alpha 5 “scares the bejesus out of me,” he said. What raises the risk at Lawrence Livermore, he said, is its proximity to neighborhoods that begin just across the street from the site.

Livermore city manager Marc Roberts lauds the lab as a “particularly good neighbor overall” and a major contributor to the

local economy.

In the 2016 defense bill, which President Obama vetoed this month, the Energy Department was required to provide a report by early next year prioritizing the decontamination and disposal of all the nation's mothballed weapons-complex buildings, and to include cost estimates for the work. It also required the transfer by early 2019 of responsibility for all eligible facilities to Environmental Management. It is unclear what Congress will include in the final defense bill.

In a May statement objecting to the transfer requirement, the Obama administration said that while it "agrees that high-risk, excess facilities should be 'dispositioned' "—or disposed of—"quickly, safely, and cost-effectively" that task can't be completed "in the foreseeable future."

Aiken councilman pushes for better waste storage program

Aiken Standard

October 31, 2015

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Classifying nuclear waste based on its makeup instead of its origin would help remove waste from the Aiken area and other Department of Energy communities, said Aiken County Councilman Chuck Smith.

Smith gave testimony earlier this week to the U.S. House Subcommittee on Environment and the Economy, and advocated for alternatives to move waste out of communities, beginning with classifying waste based on its composition.

Smith addressed the subcommittee as chairman of the Energy Community Alliance, or ECA – the only national organization of local, elected and appointed officials in communities adjacent to DOE defense facilities.

Various waste types include low-level and high-level radioactive waste, as well as transuranic waste, solid waste consisting of clothing, tools, rags, residues, debris and other items contaminated with plutonium.

The nation's current system doesn't view waste based on the specific hazards posed by its disposal. The individual types of waste need to be better classified and ranked based on environmental risk, according to Smith.

“ECA believes that changing the way we classify waste could provide additional, safe, publicly acceptable disposal paths for waste, leading to lower federal and taxpayer costs for storage and less risk to human health and the environment,” Smith said.

The alliance is also advocating for communities to be involved in a consent-based process to store nuclear waste. The topic was brought up in March when President Barack Obama authorized DOE to search for separate material repositories for high-level waste and spent nuclear fuel.

The launch officially reversed a decades-long plan to dispose of them together at Yucca Mountain, a volcanic structure near the former Nevada Test Site – about 100 miles from Las Vegas.

The facility has been heavily debated since 1994 when DOE began drilling a 5-mile tunnel through the mountain. In 2010, Obama ordered work on Yucca to cease, leaving \$13 billion of work on the table.

But the Nuclear Regulatory Commission began another analysis on Yucca in 2014 and has since reported the project would be the safest disposal option.

Regardless, Smith said the alliance is for the Yucca project, but would also support a search for another repository as long as communities are able to offer their opinions.

“As impacted communities, we stress that DOE must give the public an opportunity to formally comment on its preferred alternative and demonstrate its commitment to a ‘consent-based process’ in regards to the storage and disposal of all waste types,” Smith said.

He added that the end goal is to move all forms of waste out of hosting communities, stating “Continued failure is not an option. Not addressing nuclear waste disposal increases the risks to our communities and limits future economic development opportunities.”

Environment and the Economy Subcommittee holds hearing on low-level radioactive waste

EP News Wire

October 30, 2015

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The Subcommittee on Environment and the Economy recently held a hearing on the Low-Level Radioactive Waste (LLRW) Policy Act and issues that have arisen since its 1980 passage, such as states not having access to active disposal sites.

“DOE carefully and constructively engaged with the State of Nevada to provide for a mixed low-level waste disposal site at the Nevada National Security Site, adjacent to Yucca Mountain,” Rep. John Shimkus (R-IL), who chairs the Subcommittee, said. “We should consider how these conversations between the federal government and Nevada can continue to advance the development of a deep, geologic repository for used fuel.”

According to the Low-Level Radioactive Waste Policy Act, states are responsible for managing and disposing of LLRW, which they are meant to do through regional compacts between states. Unfortunately, today some states are not affiliated with any compacts and some compacts do not have disposal sites.

Additionally, the hearing touched on the Department of Energy and Nuclear Regulatory Commission’s plan for Greater Than Class C (GTCC) waste, which is the most dangerous category of LLRW.

“The Department benefits from the existence of multiple disposal sites, both federal and commercial,” Department of Energy Principal Deputy Assistant Secretary for Energy Management Mark Whitney said. “Our goal is to keep all waste disposal costs as low as possible. The Department is eager to work with members of Congress on the path forward for Greater Than Class C low-level radioactive waste.”

Savannah River Remediation recaps fiscal year progress

Aiken Standard

October 30, 2015

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The Savannah River Site liquid waste contractor recapped its fiscal year 2015 progress which included the closing of another waste tank.

Tank 16 was operationally closed after the dispositioning of the nuclear waste inside the tank using various liquid waste facilities.

The tank was closed ahead of schedule, signifying the seventh underground tank closed at the site and the fifth tank closed since

2012 by Savannah River Remediation, the site's liquid waste contractor.

The contractor noted several other completed tasks for the fiscal year including the production of 93 canisters of glassified waste at the Defense Waste Processing Facility by turning the sludge into glass.

The contractor also processed about 752,000 gallons of salt waste bringing the total salt waste prepared to about 5 million gallons under the contract. SRR also made strides in dispositioning salt solution, constructing Saltstone Disposal Unit 6 and creating 2.7 million gallons of tank space through the site's two evaporators.

One reason employees were successful is because they worked the greatest number of hours without a days-away injury in since taking over the contract, SRR reported.

"Safe work performance is paramount in our business. We want workers to go home each day in the same condition they arrived," said Stuart MacVean, SRR president and project manager. "By doing each job safely, we were able to accomplish more of our mission objectives."

SRS Manager Jack Craig applauded Savannah River Remediation's success during "another challenging year."